

## Specification for Programmable Temperature and Humidity Test Chamber



**Model: KMH-36L**

**Manufacturer: KOMEG Technology Ind Co.,Ltd**

**I .Product Overview**

Able to accurately simulate a wide range of complicated natural environments, and is suitable for reliability test in industrial products. Meet GB5170.2.3.5.6-95 standard requirements of environmental testing equipment and test methods for the basic parameters of electric and electronic products under the condition of humidity, low temperature, high temperature, and constant heat.

**II .Application**

Applicable to environmental adaptability and reliability test in such industrial units as electronics, electrical appliance, battery, plastics, food, paper product, vehicle, metal, chemistry, building material, research institution, inspection and quarantine bureau, university etc..

**III .Features**

- GB-2423. 1-89(IEC68-2-1)Test A: Low Temperature Test
- GB-2423. 2-89(IEC68-2-2)Test B: High Temperature Test
- GJB360. 8-87(MIL-STD. 202F) High Temperature Life Test
- GJB150. 3(MIL-STD-810D) High Temperature Test
- GJB150. 4(MIL-STD-810D) Low Temperature Test
- GB2423. 3-93(IEC68-2-3)Test Ca: Constant Heat Test
- GB2423. 4-93(IEC68-2—30)Test Db: Damp Heat Alternative Test
- GJB150. 9-93(MIL-STD-810D) Damp Heat Test

<b>1. Energy conservation</b>	Bypass mode to adjust cooling capacity to achieve a constant temperature and humidity effectively
<b>2. Easy Operation</b>	※Using company owned brand KOMEG KM-3166 LCD touch screen controller with PID control parameters setting ※Flexible approach for data collection and recording
<b>3. High reliability</b>	※Key parts are imported, ensuring the service life and high reliability ※Efficient oil separator to ensure the service life of the compressor

**IV. Main Technical Parameters**



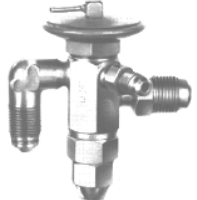
**1. Chamber**

1.1 Workspace volume      W 300 x H 400 x D 300    MM


1.2 Exterior size	W 460 x H 780 x D 1022 MM PS: External dimensions excluding protrusions part
<b>2. Temperature</b>	
2.3 Temperature range	-40°C ~ +150°C
2.4 Temp Deviation	±2.0°C
2.5 Temp Constancy	±0.5°C
2.6 Temp Uniformity	±2.0°C
2.7 Ramping and soaking rate	From -40°C to +150°C    less than 45mins    no bad From +20°C to -40°C    less than 60mins    no bad
<b>3. Humidity</b>	
3.1 Humidity range	20%R.H. ~ 98%R.H
3.2 Control range	
3.3 Humidity deviation	±3.0%RH (>75%RH) ±5.0%RH (≤75%RH)
3.4 Humidity uniformity	3.0%RH(no-load)
3.5 Humidity deviation	±2.0%RH
<b>V. Chamber Structure</b>	
Overall structure and chamber was composed of three parts as below. Insulation box, separate refrigeration units, and electrical control cabinet.	
1. Insulation box	<ul style="list-style-type: none"> <li>✘ wall material: high-quality carbon steel with static color spray</li> <li>✘ inner wall material: SUS304 # matte stainless steel plate</li> <li>✘ Insulation materials: rigid polyurethane foam insulation layer + glass fiber.</li> </ul>
2. Door	Heating wire was installed at the door frames to prevent condensation at low temperatures.
3. Observation window	With observation window, multi-hollow electric insulation coated glass

	prevent condensation effectively
4. Cable port	Φ50mm*2 located on both sides(each*1) with rubber stopper and plastic cover
5. Lighting device	11W/AC220V *1 located on observation window
6. Water outlet hole	Available for drain the condensate water
7. Sample holder	Two layers of stainless steel sample holder.
8. Mobile Casters	Mobile Casters *4 with foot cups
9. Electric control box	Total power circuit breaker, over-temperature protection.
10. Water supply system	Water pump automatic supply

**VI. Air-conditioning system**

<b>1. Control mode</b>	Forced ventilation loops design, balance temperature & humidity control system (BTHC).
<b>2. Air conditioning device</b>	Top-mounted diffuser to ensure uniformity of temperature and humidity Long axis centrifugal fan, evaporators, heaters, humidifiers was installed on air conditioning box
<b>3. Heating</b>	Quality nickel-chromium alloy wire electric heaters, Non-contact control mode (SRR).
<b>4. Cooling</b>	Sine wave pattern aluminum finned copper tube air heat exchanger (air-cooled)
<b>5. Water supply</b>	Inner water supply mode
<b>6. Humidifier</b>	Basin heated humidification Stainless steel sheathed heater Heater control: non-contact period, such as pulse width modulation, SSR (solid state relay) Water level control devices, anti-dry unit heater
<b>7. Compressor</b>	Tecumseh brand Compressor 
<b>8. Throttling device</b>	Thermal expansion valve & Capillary  
<b>9. Refrigerant</b>	Environmental-friendly refrigerant: R404A,R23









	Part	Brand	Remarks
<b>10. Parts and its Brand</b>	Compressor	Tecumseh	Hermetic piston compressor with low noise
	Oil Splitter	ALCO,AC&R,ESK	 
	Evaporator( plate)	DANFOSS	
	Pressure relay	DANFOSS, RANCO	 
	Condenser( plate)	DANFOSS	
	Drying screening program	DANFOSS, SPORLAN	 
	Capillary	KOMEG	
	Expansion valve	DANFOSS,SPORLAN	 
	Solenoid valve	SAGINOMIYA, CASTEL	 
	Exhaust gas pressure regulating valve	SAGINOMIYA	
	Condensing pressure regulating valve	SAGINOMIYA DANFOSS	 
<b>11. Refrigeration Technology</b>	Note: Two options listed is for alternate choice and backup purpose		
	※ Nitrogen welding, two-stage rotary vane vacuum pump, ensure that the internal cooling system clean and reliable. ※ water tray located at the bottom of the compressor to ensure condensate water drain through pipe freely at the rear of the chamber.		
<b>VII. Control System</b>			
<b>1. Curve recording function</b>	Pt100		

<p><b>2. Controller</b></p>	<p>KOMEQ brand KM-3166 LCD Touch screen controller with PID control parameters setting</p> 
<p><b>3. Display</b></p>	<p>Temperature and humidity settings (SV) Actual (PV) value can be displayed directly, Execution of the program can display numbers, Paragraphs, remaining time and cycles, running time display, Program editing and graphic curve display, Fixed or program operation status display, 7-inch TFT display screen.</p>
<p><b>4. Resolution</b></p>	<p>Temperature: + 0.01 °C; Humidity: + 0.1%; Time: 1min</p>
<p><b>5. Setting range</b></p>	<p>Temperature can be adjusted based on the working temp of the equipment(the upper limit +5 °C, the lower limit -5 °C)</p>
<p><b>6. Running mode</b></p>	<p>programmable running ,constant running and booking boot</p>
<p><b>7. Setting mode</b></p>	<p>Touch mode input</p>
<p><b>8. Communication interface</b></p>	<p>Data collection when connected to a computer Can be used as monitoring and remote control system, Multiple machines synchronization control available.</p>
<p><b>9. U disk Memory card</b></p>	<p>1G-8G available</p>
<p><b>10. Data collection</b></p>	<p>RAM with battery protection settings, data can be saved, maximum historical data memory storage is 90 days (when the sampling time is 1min)</p>
<p><b>11. Power off memory</b></p>	<p>Power recovery mode can be set as hot start, cold start and stop.</p>
<p><b>12. Pre-set function</b></p>	<p>boot time can be set freely and machine runs automatically when turning on power</p>
<p><b>13. Software</b></p>	<p>Windows2000 or Windows XP</p>

<b>environment</b>	
<b>14. Network Connection</b>	Can be connected to Ethernet, remote control function, data collection, can simultaneously control multiple machines.
<b>15. Function</b>	Fault alarm and causes handling prompts, power protection, the lower limit temperature protection, timer function (automatic start and automatic stop running), self-diagnostic function.

**VIII. Electrical control system**

<b>1. Power distribution Control cabinet</b>	<ul style="list-style-type: none"> <li>※ Cooling fan</li> <li>※ Switchboard</li> <li>※ Specimens terminal</li> <li>※ RS-485 physical interface (if purchase centralized monitoring software )</li> <li>※ The total power leakage circuit breaker.</li> </ul>
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<b>2. Parts and its Brand</b>	Parts	Brand	Remarks
		Controller	KOMEG
	Wire protection switch	Schneider	
	AC contactor	Fuji, Schneider	
	Thermal relay	Schneider	
	phase sequence relay	Fuji ,CROUZET	
	Time Relay	Panasonic	
	AC contactor	Schneider	
	Solid State Relays	Carlo Gavazzi	
	Temperature fuse	EMERSON,MICROTEMP	
Note: Two options listed is for alternate choice and backup purpose			

<p><b>3. Protection System</b></p>	<p>3.1 Cooling System:</p> <ul style="list-style-type: none"> <li>※ Compressor overpressure protection</li> <li>※ Compressor motor overheating protection</li> <li>※ Compressor motor over current protection</li> <li>※ Condenser fan overheating protection</li> </ul> <p>3.2 Laboratory</p> <ul style="list-style-type: none"> <li>※ Adjustable over-temperature protection --- over temperature protection mode 1</li> <li>※ Test space temperature fuse --- over temperature protection mode 2</li> <li>※ Air conditioning channel limit over temperature --- over temperature protection mode 3</li> <li>※ Controller set over temperature shutdown alarm --- over temperature protection mode 4</li> <li>※ Fan motor overheating.</li> </ul> <p>3.3 Other</p> <ul style="list-style-type: none"> <li>※ The total power phase sequence and phase loss protection;</li> <li>※ leakage protection;</li> <li>※ Load short-circuit protection.</li> </ul>
<p><b>4. Alarm</b></p>	<p>Equipment stops running and sends audible alarm when the above protection appears, meanwhile, fault, causes and solutions will be displayed on the screen.</p>

**IX. Installation**

<p>1. Ambient temp. and humidity</p>	<p>5 ~ 35°C</p>
<p>2. Power</p>	<p>AC 3 φ 4W 380V 50Hz (R, S, T, N plus ground) (voltage fluctuation ≅ ± 10%)</p>
<p>4. Grounding</p>	<p>Grounding resistance ≅ 4Ω</p>

**X. Technical Documentation**

<p>1. Technical Documentation</p>	<ul style="list-style-type: none"> <li>※ Product certificate*1</li> <li>※ Operation Manual*1</li> </ul>
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